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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/080,751

02/22/2002

Brian C. Banister

LSI-004-CIP

8423

7590 04/16/2007  
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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT

PAPER NUMBER

2611

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

04/16/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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|------------------------------|--------------------------------------|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/080,751 | <b>Applicant(s)</b><br>BANISTER, BRIAN C. |  |
|                              | <b>Examiner</b><br>Kevin M. Burd     | <b>Art Unit</b><br>2611                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-8 is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-13, 19, 24, 25, 41-46 is/are rejected.
- 7) ☒ Claim(s) 14-18, 20-23 and 26-40 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. This office action, in response to the amendment filed 1/30/2007, is a final office action.

***Response to Arguments***

2. The previous claim objection is withdrawn in view of applicant's amendment.
3. The rejection of claim 46 under 35 USC 101 is withdrawn in view of the amendment to the claim.
4. Applicant's argument regarding the previous rejection of claim 46 under 35 USC 112, first paragraph filed 1/30/2007 have been fully considered but they are not persuasive. The examiner disagrees with applicant's statement "as recognized by the examiner in paragraph 8 of the current office action, it is inherent that the computer program recited in the originally filed claim 46 is embodied within a computer readable medium." Examples of inputs to a computing device that are not computer readable mediums were provided in the previous rejection of the claim. An electromagnetic signal and a sheet of paper containing the program that is read by an optical scanner are examples of storage mediums that are non-statutory storage mediums for storing a computer program executable by a computing device. Since the originally filed specification does not disclose a computer readable storage medium for storing the computer program, the rejection of the claim is maintained.
5. A typographical error occurred in the previous office action indicating the rejection of claims 1-5, 9-13, 19, 24-25 and 41-45 as being anticipated by Raleigh et al (US 6,144,711) was a rejection under 35 USC 102(b). These claims are rejected under

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35 USC 102(e). The typographical error is corrected in the restated rejection included in this office action and the examiner apologizes for any confusion created by this error.

6. Applicant's arguments filed 1/30/2007 regarding the rejection of claims 1-5, 9-13, 19, 24-25 and 41-45 under 35 U.S.C. 102(e) as being anticipated by Raleigh et al (US 6,144,711) have been fully considered but they are not persuasive. Raleigh discloses an apparatus and a method of using the apparatus for generating weighted transmit signals with nulling in a communication system. A parameter set is initialized to some starting value (the reciprocity in a radio link that allows the undesired receive interference subspace in each SOP bin to be accurately used to describe the transmitter subspace) (column 21, lines 33-51). A weight vector is set to some initial value (column 6, line 66 to column 7, line 4). The transmitter spatial vector weights within each SOP bin increases the power delivered to the desired receiver within one or more spatial subchannels while reducing interference radiated to unintended receivers (column 6, line 66 to column 7, line 4). This transmission will change the undesired receiver interference and therefore change the parameter set. This process will be repeated until the interference radiated to unintended receivers is removed or the transmission is complete. Therefore, Raleigh discloses the weights reflect the power delivered to the desired receiver as well as the power delivered to unintended receivers in the form of interference.

Raleigh further discloses the communication system is a multiple access communication system in column 34, lines 25-38.

For these reasons, and the reasons stated in the previous office action, the rejections of the claims are maintained and stated below.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 46 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 46 claims a computer program executable on a general computing device. However, this program is not disclosed in the specification. Figures 4-6 disclose the apparatus and method of using the apparatus. The apparatus is shown in hardware and there is no mention of implementing the method in software. In addition, there is no disclosure discussing the computer readable storage medium the computer program is embodied on. The program is executable on a computing device. However, as stated above, the method for using the hardware in figures 4-6 does not disclose storing instructions. A user could input instructions and those instructions can be sent to the transmitter for implementing the instructions claimed. In this case, the computer readable medium would be an electromagnetic signal. A signal encoded with functional descriptive material does not fall within any of

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the categories of patentable subject matter set forth in 35 USC 101. In addition, the instructions could be printed on a sheet of paper and fed into an optical scanner and an apparatus could carry out those instructions, in this case, the recording medium containing computer readable instructions to perform a method would be a sheet of paper. A mere arrangement of printed material, though seemingly a "manufacture," is rejected as not being within the statutory classes (MPEP 706.03(a)). Therefore, since there is no disclosure in the specification as originally filed disclosing the computer program embodied on a computer readable storage medium, the claims are rejected under 35 USC 112, 1<sup>st</sup> paragraph as failing to comply with the written description requirement.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-5, 9-13, 19, 24-25 and 41-45 are rejected under 35 U.S.C. 102(e) as being anticipated by Raleigh et al (US 6,144,711).

Regarding claims 1, 24, 43 and 44, Raleigh discloses an apparatus and a method of using the apparatus for generating weighted transmit signals with nulling in a

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communication system, wherein the communication system includes a transmitter and a plurality of receivers (figure 9), and wherein the transmitter includes a plurality of antennas (figure 11). A parameter set is initialized to some starting value (the reciprocity in a radio link that allows the undesired receive interference subspace in each SOP bin to be accurately used to describe the transmitter subspace) (column 21, lines 33-51). A weight vector is set to some initial value (column 6, line 66 to column 7, line 4). The transmitter spatial vector weights within each SOP bin increases the power delivered to the desired receiver within one or more spatial subchannels while reducing interference radiated to unintended receivers (column 6, line 66 to column 7, line 4). This transmission will change the undesired receiver interference and therefore change the parameter set. This process will be repeated until the interference radiated to unintended receivers is removed or the transmission is complete.

Regarding claims 2, 3 and 25, updating of the weight vector is based upon feedback from the receivers (column 21, lines 33-51).

Regarding claim 4, Raleigh discloses the system is a multiple access communication system (column 36, lines 6-16).

Regarding claim 5, Raleigh discloses the transmitter spatial vector weights within each SOP bin increases the power delivered to the desired receiver within one or more spatial subchannels while reducing interference radiated to unintended receivers (column 6, line 66 to column 7, line 4).

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Regarding claim 9, the receive and transmit channels are estimated (column 29, lines 48-64) and the complex path gain of the matrix channel is used (column 4, lines 12-25).

Regarding claims 10, 12 and 13, updating of the weight vector is based upon feedback from the receivers (column 21, lines 33-51).

Regarding claims 11 and 19, the updating of the weight vector is based upon feedback from the receivers (column 21, lines 33-51).

Regarding claims 41 and 45, Raleigh discloses an apparatus and method of using the apparatus for generating weighted transmit signals with nulling in a communication system, wherein the communication system includes a transmitter and a plurality of receivers (figure 9), and wherein the transmitter includes a plurality of antennas (figure 11). Channel estimates are initialized to some starting value (the reciprocity in a radio link that allows the undesired receive interference subspace in each SOP bin to be accurately used to describe the transmitter subspace) (column 21, lines 33-51). A weight vector is set to some initial value (column 6, line 66 to column 7, line 4). The transmitter spatial vector weights within each SOP bin increases the power delivered to the desired receiver within one or more spatial subchannels while reducing interference radiated to unintended receivers (column 6, line 66 to column 7, line 4). This transmission will change the undesired receiver interference and therefore change the channel estimates. This process will be repeated until the interference radiated to unintended receivers is removed or the transmission is complete.



Regarding claim 42, Raleigh discloses an apparatus for generating weighted transmit signals with nulling in a communication system, wherein the communication system includes a transmitter and a plurality of receivers (figure 9), and wherein the transmitter includes a plurality of antennas (figure 11). A parameter set is initialized to some starting value (the reciprocity in a radio link that allows the undesired receive interference subspace in each SOP bin to be accurately used to describe the transmitter subspace) (column 21, lines 33-51). A weight vector is set to some initial value (column 6, line 66 to column 7, line 4). The transmitter spatial vector weights within each SOP bin increases the power delivered to the desired receiver within one or more spatial subchannels while reducing interference radiated to unintended receivers (column 6, line 66 to column 7, line 4). This transmission will change the undesired receiver interference and therefore change the parameter set. This process will be repeated until the interference radiated to unintended receivers is removed or the transmission is complete. The system comprises a transmitter and a receiver capable of the claimed functions. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); < In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

"[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). See MPEP 2114.

### ***Allowable Subject Matter***

9. Claims 6-8 are allowed.
10. Claims 14-18, 20-23 and 26-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd  
4/10/2007

  
**KEVIN BURD**  
**PRIMARY EXAMINER**